

BushraP 10/11/2025 ↻

# AI in Healthcare: Applications, Impact & Ethics

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## Personalized Overview

I chose healthcare because it sits at the intersection of life and death decisions, scarce clinical time, and massive data, from medical images to electronic health records. AI is already on the front lines, speeding up image interpretation, catching deteriorating patients earlier, and cutting documentation burden.

In this Padlet, I'll cover three concrete applications:

- (1) diagnostic imaging triage/detection using computer vision and deep learning;
- (2) sepsis early-warning systems that learn patterns in EHR data to flag high-risk patients; and
- (3) ambient AI scribes powered by large language models to auto-draft clinical notes from conversations.

I'm drawn to these examples because they tackle major bottlenecks: radiology backlogs, delayed recognition of sepsis, and physician burnout from charting. The benefits include faster care, more consistent detection of critical findings, and more clinician face time with patients. At the same time, AI poses challenges, potential bias, false positives that can erode trust, privacy risks from sensitive data, and new safety/oversight questions when automation drives clinical action.

Across the wall, I'll show how the technologies work, why they matter, what their limitations are, and how they're being adopted in real hospitals today. I'll also discuss future trends (e.g., broader multimodal models and workflow integration) and ethical considerations (fairness, transparency, accountability). Finally, I'll reflect on what I learned in the research process and how it shaped my view that AI should augment, not replace—clinicians, with strong guardrails to protect patients and promote equity.

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AI-Enabled Medical Devices

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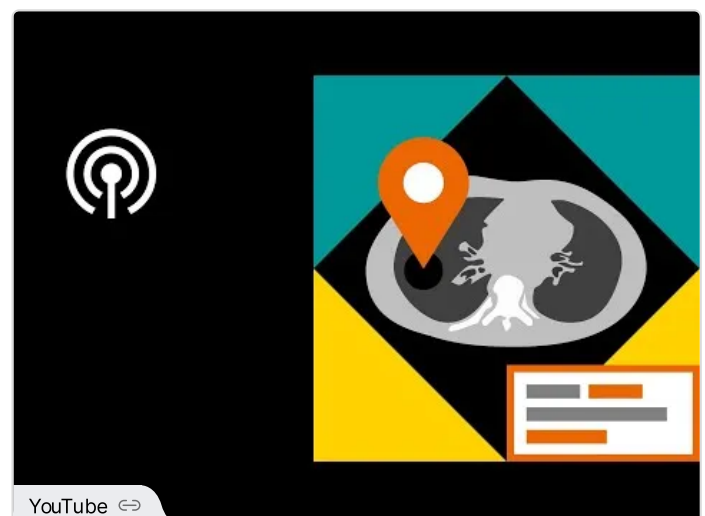
## Radiology : AI for Diagnostic Imaging Triage & Detection

Description & tech: Deep learning (computer vision) analyzes CT, MR, X-ray to flag likely abnormalities (e.g., stroke, hemorrhage, lung nodules), reorder work lists, and support detection.

Benefits: Faster turnaround on urgent cases, fewer misses on subtle findings, and measurable efficiency gains in real-world deployments.

Challenges: False positives, shifting case mix, and the need for rigorous validation; AI supports, not replaces, radiologists.

Why I'm interested: It shows "human + AI" teamwork at scale, turning overwhelming image volume into prioritized, safer workflows while keeping clinicians in control.



How AI is transforming Radiology

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### Hospital Medicine: Sepsis Early-Warning (TREWS)

Description & tech: Machine-learning model (TREWS) continuously scans EHR data (vitals, labs, notes) to flag patients at risk for sepsis, prompting earlier evaluation and treatment.

Benefits: Multi-site studies associate TREWS alerts with earlier antibiotics and reduced mortality.

Challenges: Alert fatigue, precision vs. recall tradeoffs, workflow adoption. Clinical oversight remains essential.

Why I'm interested: Sepsis is deadly and time-critical; even hours gained can save lives. AI here feels like a genuine safety net that scales across wards.



Sepsis explained in a brief animated video (in English).

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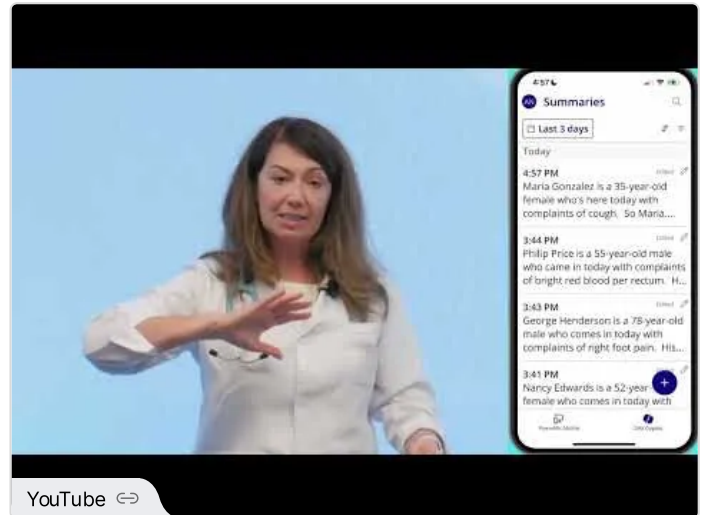
### Clinical Operations: Ambient AI Scribes

Description & tech: LLM-based “ambient” systems capture clinician-patient conversations and auto-draft notes (HPI, assessment/plan), codes, and orders for review.

Benefits: Less after-hours charting, more clinician eye contact, improved satisfaction.

Challenges: Accuracy, hallucinations, privacy/security, and cost; needs strong safeguards and human review.

Why I'm interested: Documentation burnout is a core driver of attrition. If AI can safely return time to the bedside, that's a meaningful quality-of-care win.

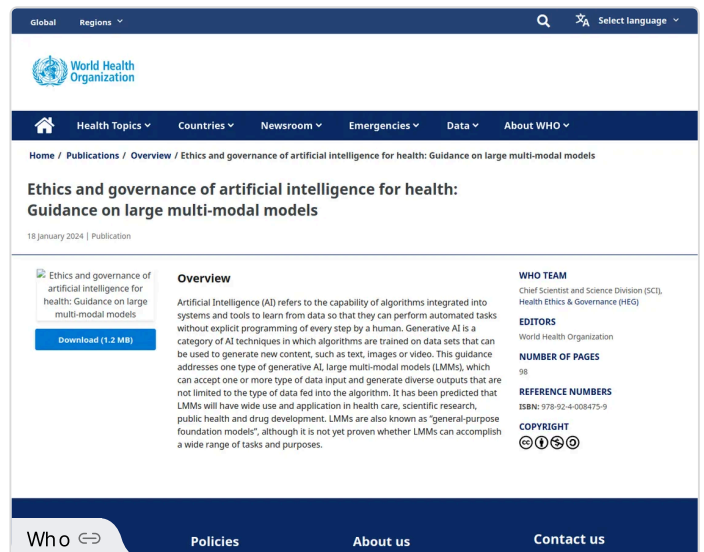


Nuance - DAX Copilot Demo Video

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### Future Trends and Ethical Considerations

Looking ahead, I expect broader multimodal AI that fuses images, labs, notes, and waveforms, plus tighter workflow integration inside EHRs and imaging platforms. Regulatory clarity is growing as agencies track AI/ML-enabled devices and update guidance. In parallel, ambient AI will expand beyond note-drafting into orders, patient messaging, and coding, with human verification. Ethically, health AI must protect privacy, ensure fairness (minimize bias/harm across demographics), support transparency and explainability when feasible, and maintain accountability with clear human oversight. WHO highlights principles like autonomy, safety, inclusiveness, and sustainability. For generative and large multimodal models, WHO also stresses data governance, quality control, and impact monitoring.



My view: AI should augment clinicians, not replace them, with rigorous evaluation in the intended setting, routine post-deployment monitoring, and equitable access. Procurement should demand bias assessments and robust security. Patients deserve notice and the ability to ask for human alternatives. Ultimately, the most promising trend is human-AI collaboration, tools that measurably improve patient outcomes and clinician well-being while meeting ethical guardrails.

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## Ethics and governance of artificial intelligence for health: Guidance on large multi-modal models

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### Societal Impact

AI in healthcare touches society beyond the bedside. Roles shift rather than vanish; radiologists, nurses, and scribes focus more on complex decisions and interpersonal care while AI handles triage or documentation. Upskilling will be essential. Medical data are among the most sensitive; breaches or secondary use without consent can erode trust. Dataset gaps and biased labels can worsen disparities (e.g., under-serving marginalized groups); fairness testing and representative data are critical. At scale, AI could lower unit costs and expand services (e.g., faster imaging reads), but licensing and infrastructure may widen gaps between well-resourced and rural/low-income settings. False positives/negatives carry real risk; clinicians must remain in the loop, with clear liability frameworks. Personally, this research convinced me that governance matters as much as algorithms. The biggest wins come when organizations pair strong validation and monitoring with training and patient-centric design. Society should encourage responsible innovation, funding evidence, mandating transparency, and aligning incentives to reward outcomes and equity rather than volume.

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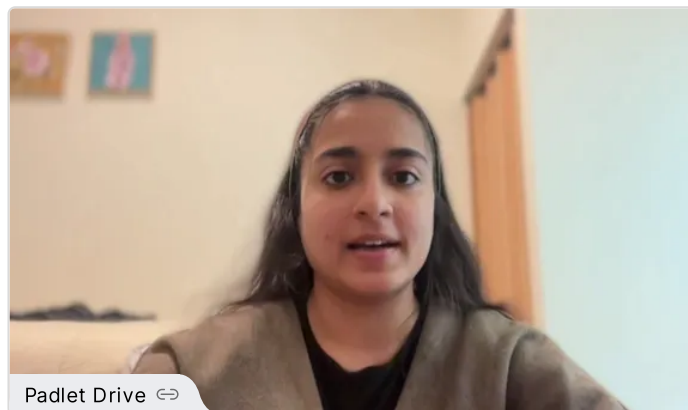
The Washington Post ↩

AI hasn't killed radiology, but it is changing it

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### Overview Video

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Padlet Drive ↩

video

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### Reflection

Researching real deployments (imaging triage, sepsis alerts, AI scribes) changed my view of AI in healthcare from hype to measurable, scoped impact. My biggest challenge was separating strong clinical evidence from marketing; meta-analyses and peer-reviewed studies helped. I also learned to weigh benefits against risks like bias, privacy, and alert fatigue. The most surprising insight was how human-AI collaboration, not replacement, drives value, especially when tools are integrated into workflow and monitored over time. Overall, I now see AI as a set of focused instruments that can improve outcomes and clinician well-being when implemented with rigorous governance and equity in mind.

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